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Method and configuration for program storage in radio or television reproduction apparatus
The invention relates to a method for the program storage in radio or television reproduction apparatus, where a control of the reproduction apparatus stores information denoting program sources (ARD, ZDF, BR, RTL, ...), a control program associated with the control being implemented such that as a function of a command entered into the reproduction apparatus, information can be stored in a store, which denotes a program source preferred by a user, where, after the reproduction apparatus has been switched on, this information

is called up from the store, and the reproduction apparatus is set to a station associated with the program source.

To facilitate the operation of the reproduction apparatus the invention provides that the control program is implemented such that times, in which radio or television program information of specifiable program sources is reproduced, can be determined, and that information, which denotes these times, can be stored associated with the information denoting the particular program sources, and that after the reproduction apparatus has been switched on, the information denoting that program source is called up, for which the longest reproduction time had been determined.

Specification

The invention relates to a method and a configuration for the program storage in radio or television reproduction apparatus according to the preamble of claims 1 or 6.

Television receiving apparatus are known, which when the apparatus is switched on sets it in each instance to the same program source (for example the Erste Deutsche Fernsehen ARD).

Furthermore are known television receiving apparatus, which, in addition to a

station store, are equipped with a store serving for storing information denoting a program preferred by the user. The corresponding procedures presuppose certain entries of the user into the apparatus or into a remote control, and, depending on the entered commands, after the television receiving apparatus is switched on or switched on again, the information corresponding to the command are read and the receiving apparatus is set to that station, which corresponds to the information entered by the user. This configuration, first, entails the disadvantage that users in practice are often overtaxed when carrying out correct command entries. This configuration has furthermore the disadvantage that additional commands must be entered into the apparatus or into a remote control transmitter if the user wishes another setting of the apparatus after it has been switched on again.

Building on this prior art, the invention addresses the problem of specifying a method and a configuration of the above described type, which in simple manner makes possible automatic settings of a radio or television reproduction apparatus.

This problem is solved with a method and a configuration defined in the claims.

The invention entails a multiplicity of advantages. The user is relieved of having to complete any entries into the radio or television apparatus or into a remote control in connection with the selection of a preferred program source. This applies also if the user in the course of time requests less frequently originally preferred programs and prefers other programs. In this case the user also does not need to make any entries into the apparatus or into a remote control, since the changed request behavior is automatically acquired and, following switch-on processes of the apparatus, is converted by setting the corresponding station or channels. A further advantage of the method according to the invention comprises that relatively few program steps need to be carried out internally in the reproduction apparatus.

An advantageous embodiment of the invention is characterized thereby that the information of that program source, for which the longest reproduction time has been determined, is written into a first store. This facilitates access of the control of the radio or television apparatus to the information, for which the longest reproduction time had been determined, such that the setting to the associated station also takes place with low technical program expenditure.

The information, which denotes that program source, for which the last reproduction time had been determined, is preferably written into the first store at that point in time at which change-over switching took place to another program source or the reproduction apparatus has been switched off. This ensures that the content of the store is always available in updated form.

The content of the store, in which the information denoting that program source, for which the longest reproduction time had been determined, can be represented on a

visual display device. Therewith, the user can readily detect to which station the apparatus is set when it is switched on.

A further advantageous embodiment of the method according to the invention is characterized in that the control program is implemented in a manner such that through a command entered into the reproduction apparatus the information can be deleted, which denote the times, in which radio or television program information of different program sources are reproduced. Therewith in the event his preferences have changed for a specific program, a user can simply request that his changed request behavior is taken into consideration starting at the point in time at which he enters the corresponding command.

The invention will be explained in conjunction with the drawing. The drawing depicts the block circuit diagram of a configuration according to the invention for program storage in radio and television reproduction apparatus.

A radio or television reproduction apparatus includes a control CPU, which is connected via a data bus DB with a store RAM, in which the control program for carrying out the method according to the invention is stored. The control CPU is furthermore connected via the data bus DB with a working store MEM, which is comprised of the individual stores MEM1, MEM2, ..., MEMn and MEMS. The above listed individual stores MEM1, MEM2, ... MEMn, MEMS, which are implemented as nonvolatile stores, serve for receiving information denoting the program sources, for example Erstes Deutsches Fernsehen ARD, Zweites deutsches Fernsehen ZDF, etc. This information is for example information which denotes television station frequencies. An individual store, the store MEMS, which is optionally provided, serves for receiving that information, which denotes the program source preferred by the user. In the configuration according to the invention this store does not necessarily need to be provided, as will yet be described.

Furthermore is provided a working store MEMT, which is comprised of nonvolatile individual stores MEMT1, MEMT2, ..., MEMTn. These individual stores serve for receiving in each instance a time information, the time information denoting the time in which the radio or television program information of a specific program source had been reproduced. The individual store MEM1, which contains information denoting a specific program source, for example ARD, and the individual store MEMT1 denoting the time, in which the program ARD had been reproduced, are logically associated with one another; both stores MEM1 and MEMT1 can also be formed by one store.

The control CPU is also connected via the data bus DB with the reproduction section of the radio or television reproduction apparatus.

With the control CPU is associated a control program, which defines the method

according to the invention. When the apparatus is switched on for the first time, thus when it is initially taken into operation, it can be provided that the apparatus is set to any available station. If the user wishes the reproduction of another program, he subsequently switches to another program source. The times, in which radio or television program information of different program sources is reproduced, are determined individually for each program source by the control CPU. The determined times are written into the particular store MEMT1. If, for example, after the apparatus has been first set when taking it into operation for the first time, the program source ARD is being reproduced for a time period of 10 seconds, the corresponding time information ($t = 10$ s) is written into store MEMT1. MEMT1 is logically associated with store MEM1, which denotes the program source ARD. If the user in the described example switches after 10 seconds to the program source ZDF, and this program source is activated during a second time period $t2 = 35$ minutes, the corresponding time information ($t2 = 35$ min) is written into store MEMT2, which is logically associated with MEM2. The store MEM2 contains information denoting the program source ZDF.

Writing the information $t1 = 10$ s into store MEMT1 preferably takes place at that point in time, at which the switching from the program source ARD to the program source ZDF took place. The information $t2 = 35$ minutes is written into store MEMT2 at the point in time at which either the reproduction apparatus is switched off or switched to another program source, for example ARD or BR (Bayerischer Rundfunk).

After the apparatus is switched on again (apparatus was previously switched off), the apparatus is set to the station, for which the longest reproduction time had been determined. It can be provided that for this purpose all stores MEMT1, MEMT2, MEMTn are queried in order to determine in this manner the longest time and the associated station (in the above example a station which transmits the program of the ZDF) set.

It can alternatively be provided that into the store ("first store") MEMS the information of the program source is written, for which the longest reproduction time had been determined. This writing process preferably is also carried out when switching from one program source to another program source or when the apparatus is switched off. After the apparatus has been switched on again, the CPU immediately accesses store MEMS, calls up the corresponding program source information and sets the associated station. The stores MEMT1, MEMT2, ..., MEMTn, in contrast to the above described first alternative, do not need to be queried when the apparatus is switched on.

The control program can moreover be implemented such that the content of store MEMS, in which the information is stored denoting that program source, for which the longest reproduction time had been determined, is displayed on a visual display device

DISPL.

The control program of the control CPU can furthermore be implemented such that through a command, entered into the reproduction apparatus or into a remote control transmitter associated with the reproduction apparatus, the information can be deleted, which denotes the times, in which radio or television program information of different program sources are reproduced. If the apparatus is switched on again after such an entry, the apparatus is either automatically set to a specifiable station, for example to a station of the program source ARD. Alternatively, it is provided that setting the station only takes place through a corresponding setting command by the user.

Patent Claims

1. Method for the program storage in radio or television reproduction apparatus, in which a control (CPU) of the reproduction apparatus stores information denoting the program sources (ARD, ZDF, BR, RT) and a control program associated with the control (CPU) is implemented in such manner that, as a function of a command entered into the reproduction apparatus, information can be stored in a store (MEM1, MEM2, ..., MEMn, MEM\$), which denotes a program source preferred by a user, and, after the reproduction apparatus is switched on, this information is called up from the store, and the reproduction apparatus is set to a station associated with the program source, characterized in that the control program is implemented in a manner such that those times, in which radio or television program information of specifiable program sources are reproduced, are determined, that information denoting these times associated with the information which denote the particular program sources, can be stored and that, after the reproduction apparatus is switched on, the information denoting that program source is called up for which the longest reproduction time had been determined.
2. Method as claimed in claim 1, characterized in that the control program is implemented in a manner such that the information denoting that program source, for which the longest reproduction time had been determined, is written into a first store (MEMS).
3. Method as claimed in claim 2, characterized in that the control program is implemented in a manner such, that the information denoting that program source for which the longest reproduction time had been determined, is written into the first store (MEMS) at that point in time, at which the reproduction apparatus is switched to another program source or the reproduction apparatus is switched off.
4. Method as claimed in one of the preceding claims, characterized in that the control program is implemented in a manner such, that the content of the store (MEMS) in which the information denoting that program source is stored for which the longest reproduction time had been determined, can be displayed on a visual display device (DISPL).
5. Method as claimed in one of the preceding claims, characterized in that the control program is implemented in a manner such, that through a command which can be entered into the reproduction apparatus, that information can be deleted, which

denotes the times in which radio or television program information of a specifiable program source is reproduced.

6. Configuration for carrying out the method as claimed in one of the preceding claims, characterized in that the reproduction apparatus control (CPU) is connected via a data bus (DB) with a store (RAM), in which the control program for carrying out the method can be stored, and is connected with the store (MEM), in which the information of that program source can be stored, for which the longest reproduction time had been determined.
7. Configuration as claimed in claim 4, characterized in that the reproduction apparatus control (CPU) is connected with a visual display device (DISPL).

1 sheet of drawing enclosed
